

✓ F. 11

With water complement

BRITISH COLUMBIA FISHERIES DEPARTMENT, 1913.

SEA-LIONS ON THE COAST OF BRITISH
COLUMBIA

BY
DR. G. E. AND W. A. NEWCOMBE

PROVINCIAL LIBRARY

PROVINCIAL LIBRARY
VICTORIA, B. C.

3 3298 00085 1106

SEA-LIONS ON THE COAST OF BRITISH COLUMBIA.

BY DR. C. F. AND W. A. NEWCOMBE.

*Hon. W. J. Bowser, K.C.,
Commissioner of Fisheries, Victoria, B.C.*

SIR.—We have the honour to report that, in pursuance of your instructions to ascertain the number and the habits of the sea-lion on the coast of British Columbia, we personally visited the following parts of the coast-line of the Province during the summer and fall of 1913: The main channels between Alert Bay and the Nass River; most of the west shores of the outlying islands skirting these channels; the west coast of Graham and Kunghit Islands of the Queen Charlotte Group; several of the Sea Otter Group in Queen Charlotte Sound; and the Cape Scott Islands off the north end of Vancouver Island.

In the greater part of this investigation we had the able assistance of Captain C. Spring, with his gasoline sloop "Nymphe."

From the present and former investigations on the coast of the Province we are of the opinion that sea-lions breed only on the islands herein mentioned.

Summarizing the results of the different expeditions, we found that the large rookeries are arranged in three principal groups. The most northern is on the Cape St. James Islands of the Queen Charlotte Group. An intermediate set lies off the important fishing grounds of Rivers and Smith Inlets, on islands generally known as the Sea Otter Group. The southernmost rookeries are those on the Cape Scott Islands. Each group contains several individual reeding-places of varying size, but not far distant from each other.

There were approximately 11,000 sea-lions breeding on these groups this year.

A circle with a radius of sixty-five nautical miles would enclose all of the groups. Contrary to information received from apparently reliable people, both whites and native, the very numerous rocks lying off the islands to the west of the main steamboat channels were practically deserted at the time of our visit, and no young sea-lions were observed on any of them. Solander Island, a mile west of Cape Cook, Vancouver Island, which at times swarms with mammals, was apparently deserted when we passed on July 20th. These islands are evidently not used as breeding-ground in the season they are used as hauling-grounds.

Of the above rookeries it will be seen that the Sea Otter Rocks are the nearest to the Rivers Inlets fisheries, from which strong complaints have been made of loss by damage to nets and destruction of salmon. These rookeries are only separated from the fishing-grounds by a stretch of thirty miles of water, but the sea-lions now follow the salmon inshore and haul out in great numbers on rocks and headlands on the mainland side, notably upon Addenbrooke Point, but they do not breed there.

Rookeries which probably have a bearing upon the depredations amongst the herring of Barkley Sound are reported from the north-west coast of the State of Washington, but we have no special information about them at present. Flattery Rocks, which it is believed are frequented by sea-lions in the breeding season, are only about sixty miles from Barkley Sound. The Cape Scott rookeries are about three times as far away, and Solander Island, the principal resort of sea-lions on the west coast of Vancouver Island, is about 120 miles to the north.

From the above notes it follows that the sea-lion rookeries of British Columbia lie at the points of a triangle. The apex is occupied by the Cape St. James Group, in latitude 51° 50' N., about 100 miles to the north-west of the Cape Scott Islands, in latitude 50° 50'. These latter are only about forty-five miles south-west of the Sea Otter Rocks.

SPECIES FOUND ON BRITISH COLUMBIA COAST.

EUMETOPIAS STELLERI (STELLER'S SEA-LION).

So far the only species of sea-lion that has been recognized in the waters of British Columbia is the large northern form, *Eumetopias Stelleri*, Steller. This was found by the man whose

name it bears about the year 1740 on the coast of Kamchatka, and was named by him *Zeo marinus*. His description and notes as to its habits were published in St. Petersburg in 1751, six years after the author's death.

A companion of Bering when that unfortunate explorer died on Bering Island after shipwreck there, Steller made notes of another large marine mammal, the extinct sea-cow (*Rhytina stellerti*), to which his name has also been attached.

Range of Steller's Sea-Lion.—From Bering Strait southward to California and Japan.

External Characters.—The length of a full-grown male is from 11 to 13 feet; the girth from 8 to 10 feet; and the weight from 1,000 to 1,300 lb. The female measures from 8 to 10 feet, and its weight ranges from 400 to 500 lb. Young sea-lions are dark brown in colour, but become paler with age, the adults being mostly of a golden-yellow tint, but often mottled in various ways. The coat consists of two kinds of hairs. The longer and more plentiful ones are straight, stiff, and flattened; the inner are short and fine. The hair is longest on the neck.

As doubts have been expressed as to the fish-eating propensities of Steller's sea-lion, some authorities maintaining that they "appear to subsist mainly on fucoid algae or sea-weed" (Dall), it may be well to recall that this animal belongs to the carnivora or flesh-eating order of the animal kingdom, and that its massive skull is furnished with large canine teeth in each jaw. For the greater part of the year it resorts to low, rocky, outlying points and islands which command the narrow channels through which salmon must pass up on their way to their breeding-places in the rivers and streams of the mainland and the larger islands. No doubt at times they have recourse to molluscan food when fish are scarce, and it is possible that on these occasions a certain quantity of seaweed is also swallowed.

Like the Californian sea-lion and the fur-seal, Steller's sea-lion is furnished with small external ears.

As it has been vaguely reported that the California sea-lion ranges as far to the north as Cape Flattery, and as the Indians of Barkley Sound declare that a new species has of late years made its appearance in their waters, it may be well to point out some of the differences between the two species of the North Pacific.

Of the two, Steller's is much the larger in average size, its muzzle is much broader, and its voice deeper, on the rookeries producing a prolonged bass roar instead of the short bark of the Californian species. The skulls differ chiefly in the presence of a wide space between the fourth and fifth pairs of upper molars in Steller's lion, its larger facial angle and its less developed sagittal crest.

DAMAGE DONE BY SEA-LIONS TO THE FISHERIES.

Practically the only tangible complaints of great damage were heard of at the outer Rivers Inlet canneries and at Ucluelet, at the mouth of Barkley Sound.

Mr. Enrick, manager of the Brunswick and Good Hope Canneries on Rivers Inlet, states that of late years the losses of his canneries have steadily increased, through injury to nets and destruction and mutilation of fish. His employees, who had supplied him with definite information, are now engaged at the Namu Cannery, and, on being interviewed, confirmed in every particular what Mr. Enrick had said. Sea-lions lie in wait between Addenbrooke Point and the entrance of Draney's Inlet. Some follow the salmon into the nets, and when entangled therein break out by their great weight and strength, which causes a great expense to the fishermen in renewals and loss of time. Others not only devour large quantities, but also, when satisfied, mutilate hundreds of fish, apparently in sport, and are even said to toss them in the air, catching them again when falling.

At Ucluelet it was learned that these destructive mammals have lately increased in numbers and have seriously interfered with the herring-fisheries. They are said to follow the herring up in bands of twenty or thirty, and not only devour thousands, but, getting between the shoals of fish and the most advantageous places for taking them, deprive the fishermen of the best opportunities of making productive catches.

Summarizing also the opinions of all the Indians spoken to along the coast, and these may be said to represent all the tribes interested in the matter, they were unanimous in the following statements: No Indians of British Columbia are now dependent upon the sea-lion for food, clothing, or any other necessity or luxury. All the coast Indians, being more or less dependent upon the edible fish for their maintenance, either directly as food or indirectly as bringing

an annual income through the various fisheries maintained by the whites, would like to see a reduction in the numbers of both hair-seals and sea-lions. From their long knowledge of their feeding habits, they believe that both of these mammals are greatly detrimental to their interests on account of their voracity. If it were determined to reduce their numbers, all would be glad to help and share in any reasonable bounty.

DESCRIPTION OF THE VARIOUS SEA-LION ROOKERIES AND HAULING-OUT PLACES.

As before stated, there are three principal rookeries, Cape St. James, Sea Otter Group, and Cape Scott Islands, where sea-lions breed.

Cape St. James Rookery.

This consists of a chain of three or four rocky islands at the extreme south end of the Queen Charlotte Group, extending to a distance of about four miles in a south-east direction from Cape St. James, or Gunhitkun of the Haida. The rocks are called Kerouart and Hummock on the charts. At the time of our visit, June 12th and 13th, 1913, we found that every available rocky ledge was occupied by sea-lions; the large old bulls having taken possession of the highest places, the cows and younger males being at lower levels.

There were many yearlings, but only a few pups, except on two islands. On one of these, almost the most distant, grassy on top above the spray and greatly broken up below, in the crevices on the north-east side were a few pups which could not have been more than six or seven days old. On each day of our visit there was a heavy sea with strong tide-rips, which prevented a landing being made, and also rendered it difficult to get satisfactory photographs on account of mist and spray. The second lies to the north-west of the last, and has a long narrow ledge with a smooth slope towards the south-east, from which, on our approach, vast numbers of the inhabitants shot into the water after a hasty scramble from their resting-places, leaving a number of new-born pups. In all, we reckoned we saw about 2,000 individuals here of all ages.

From Timothy Tait, of Ninstints, the nearest Haida village, but now living at Skidegate, it was learned that in former days these rocks were hunted by certain families every year and at various seasons according to their wants. He says that the young are brought forth early in July though a few earlier and some later than then.

The principal uses to which they were put were the following: The meat and fat were used as food; the longer whiskers to make fringes on the crowns of head-dresses, and the skins for cutting into strips and made into snares for black bear, and other pieces were used for lines. The stomachs were dried and cleaned and used for floats, and also as storage receptacles for grease.

The main rookery was called Kunghit and was the high island next to the outermost rock. The only mode of killing them here, used by the Indians, was with a long spear with a detachable head, the latter being fastened to a line sometimes as much as 200 fathoms in length. They were played on this line, as a salmon is on a troll, and when played out were finished off by clubbing. In fine weather they were towed to a fine sandy beach just to the east of Cape St. James, where they were cut up and the fat boiled down; the name of the camp being Kal-llnagai, or the Sea-lion Village.

The nearest harbour for large vessels is that named Luxana Bay on the chart, a sketch of which was made in the year 1788 by Captain Charles Duncan, R.N., who thought that the name meant "The place of beautiful women." The Haida now give the name as "Kinejl." There is an anchorage in it on the east side of the inner end, which makes a bend towards the north, and is thereby protected from south-east seas. In stormy weather, like most of the harbours in this region, heavy squalls are said to strike over the comparatively low hills to the south and west. Rose Harbour, on the north side of Kunghit Island, though more distant, affords much better shelter.

The Sea Otter Group Rookeries.

This group of rocks was so named after Captain Hanna's vessel, which was here in 1786. Captain Hanna's chart shows the three principal islands now used as breeding-places by sea-lions, but two of his names have been changed. His Fairway Rock is now the Watch Rock of modern charts; his well-named Peril Rocks were, probably accidentally, changed to Pearl Rocks by Vancouver; and only the Virgin Rocks retain their original name.

We visited the Pearl Rocks on June 21st. The largest, about 20 feet high, is bare and rounded, distant about four miles and a half from Cape Calvert. As we approached the rock we could see, when two miles away, that it was occupied by a great herd of sea-lions, the heads and necks of the larger individuals showing up against the sky-line like large tree-stumps. On getting near the rock we found about 300 pups among the adults, the latter numbering fully 800. The southern rock, which is low and flat, had from 200 to 250 adults, but no sign of pups, no doubt because ordinary summer gales send seas clean over it.

A few specimens were killed here, but, owing to the heavy sea, only one old bull was retrieved and towed into Cape Calvert. On examination of his stomach it was found quite empty, with the exception of a number of small parasites attached to the mucous membrane.

On visiting the rocks again the following day, we shot five more adults, but were unable to get any of them. A pup was clubbed on shore, a difficult landing having been made on the nearly vertical north side of the largest rock.

W. A. Newcombe made trips to these rocks on August 29th and September 1st, finding the above numbers greatly reduced. He opened the stomachs of two yearlings secured here, finding mussel-shells, stones, and parasites in one, and a brownish fluid he took for partly digested seaweed and parasites in the other.

The second breeding-place visited in this group was that on the isolated Watch Rock, which lies three miles to the west of the Pearl Group. It is from 70 to 80 feet high, and on its lower ledges affords resting-places for numbers of sea-lions, though on the day of visit there were not more than 100 adults and a dozen pups.

For vessels of any size the nearest harbours to this part of the Sea Otter Group are: Schooner Retreat, about eleven miles distant, in Rivers Inlet; Safety Cove, on the east shore of Calvert Island, fourteen miles; and Millbrooke Cove, on the north side of the entrance to Smith Inlet, eleven miles. For small boats shelter may be found in moderate weather in Grief Bay, just south of Cape Calvert and only five miles from the Pearl Rocks, where we anchored one night. There is also a small bay to the west of this which we did not examine. It is said to be full of kelp, but well protected by small islands. All the above harbours are available for the Virgin Rocks, though Millbrooke Cove is the nearest for large vessels, and an additional shelter is found on the east side of Table Island for small craft, it being only fifteen miles from the rocks.

The third and last rookery in this group is on the Virgin Rocks, which lie fourteen miles west-south-west from Egg Island. They consist of three rocks close together, with a fourth one mile to the south-west. The middle rock of the group of three and the distant rock are the main rookeries, each of them having all of 1,000 on. The small rock on the south of the group had from 200 to 300. The middle rock has two hummocks, separated at high tide, and gradually slopes to the south. There were about 500 pups here in the latter part of August. The rock immediately to the south of this is rounded and about 10 feet above high water. There were a number of pups on here, but as they are strong swimmers when two months old, I think they had migrated from the middle rock. The rock on the north is low and awash, so not inhabited. The distant one is long and narrow, running north and south, with a slope to the east. The pups here numbered about as many as on the middle rock.

Of six yearlings killed at these rocks, all had food in the stomachs, though I could not identify anything in particular in the milky substance found. Stones were found in the stomachs of two and a single parasite in a third. The largest of the yearlings measured 7 feet 5 inches in length and 3 feet 5 inches greatest girth.

These rocks are the farthest from shelter of any of the rookeries on the British Columbia coast.

The Cape Scott Islands Rookeries.

These consist of two main islands, Cox and Lanz, and three outlying groups, East and West Haycock and Triangle. They extend nearly twenty miles in a westerly direction from Cape Scott. Between the western islands the passages are wide, but no soundings have been taken, and, as it is remarked in the "British Columbia Pilot," heavy tide-rips and overfalls have invariably been observed here; boats are warned from venturing among or through these channels unless compelled to do so. Within a short distance to the north and west of Triangle are soundings ranging from 30 to 60 fathoms, and five or six miles south 80 to 100 fathoms.

are found. Halibut are plentiful here at certain seasons, and in fine weather many fishing-boats from Victoria, Vancouver, and Puget Sound ports may be seen, with their dories out, trawling on these banks.

Of the five larger islands, the westernmost of the group, Triangle (Heitia of the Indians), is 25° W. by S. from Cape Scott, nearly 700 feet high, and surrounded by rocks continuously lashed by waves. Some of these rocks form pinnacles, of which a few have been converted into natural arches. On the lower shelves of the islets lying off the north side of Triangle, we estimated that at the time of our visit, July 18th to the 20th, we saw about 250 adults and fifty pups. They were all very wild, as the men in charge of the Lighthouse and Wireless Station are constantly firing at them and at the various sea-birds which inhabit Triangle in their breeding season. The operators on the island say that there has been a great diminution in the numbers of sea-lions since their arrival, no doubt from the same causes. The rocks to the south-east of Triangle were also visited, but none of them were being used as a rookery, as reported by Indians who had visited the island in former days. A great many hair-seal haul out on the beaches on the south and west sides of the main island, and we noticed a number with pups swimming about in the kelp.

It may be noted that on one of the pinnacles plants were collected which have previously been found in similar localities favoured by sea-lions and sea-birds as breeding and resting places. These plants are *Baria maritima*, a native of the Farallones, and next reported from Sea Bird Island, in Barkley Sound, and *Nesodraba megalocarpa*, first found by the writer on the islands to the west of the Queen Charlotte Group in 1897. Specimens of the above were sent to the Provincial Botanist, J. Davidson, F.L.S.

A landing on Triangle is made on the east side, in moderate weather, upon the beach where the Dominion Government have erected a boat-house for the light-tenders.

The West Haycocks were passed in going to Triangle, but as no sea-lions were visible a closer examination of the group was not made.

The rookeries of greatest interest in the Scott Group were found on the rocks surrounding East Haycock Island. East Haycock itself rises 80 feet above the sea and its top is covered with stunted trees. Rocks 40 feet high, with grass and low-lying shrubs above the wash of the sea, are in the immediate neighbourhood. The scattered outlying rocks to the north and south are entirely free from vegetation. The extreme ones have rounded tops, and it is on these that sea-lions are found in the greatest numbers. The rock farthest north has the general appearance of a limpet when approached from the east, being high in the centre and sloping fairly evenly to the north and south; the slopes being striped from top to bottom with sea-lion excrement. There were fully 1,000 sea-lions on this rock and a small one directly south. A rock just north of the main island is high, with perpendicular cliffs on the north and south sides, but has ledges on the east and west ends where sea-lions to the number of 500 find hauling-out places. Rocks to the south with a deep-water channel between them and the main island, together with a small rounded rock, awash in storms, a quarter of a mile further south, add another 1,000 to the numbers in this group. There were all of 700 pups on the different rocks.

The nearest anchorage, though not good in many winds, is on the Lanz Island side of the pass between Lanz and Cox. In south-east winds it would be as well to move to the Cox Island side of the same passage.

These rocks were visited in the middle of August; Mr. Grinnell, Vancouver, found a berth for W. A. Newcombe with his party hunting sea-lions for their hides. The pups were now found to be quite powerful swimmers, though by keeping them in the water three or four hours they showed signs of fatigue and took every opportunity to haul out and rest. When at Triangle a month earlier, a few came off the rocks on our approach, but stayed in the vicinity.

The pups killed in the Haycock Group averaged 4 feet 8 inches in length, with a greatest girth of 2 feet 10 inches. The only adult cow secured while I was with the party had her stomach full of fish on examination; salmon, cod, and bass being recognized. A yearling's stomach contained a milky substance and a number of bones supposed to belong to black bass.

A thing of interest occurring at these rocks while we were there was the attack made on the sea-lions we had driven off the rocks by a couple of black fish. Some of the sea-lions, in their terror, scrambled up the rocks, though we were only a short distance off. The other hunting-party say this same pair managed to catch a sea-lion near them, and tossed it in the air just as the sea-lions are said to do with halibut and salmon.

The approach on the East Haycock reported by Indians was not investigated, though a number of landings were made on the different sea-lion rocks.

Cox and Lanz Islands are both wooded and have no available rocks for sea-lion resorts. A number of hair-seal were noticed in the kelp surrounding the islands.

The only other hauling-out place in the vicinity that has been reported is on the rocks just to the south of Cape Scott. But on none of my trips was I able to confirm the information, though, in passing within a mile and a half, I could see no sign of sea-lions with glasses.

Solander Island, a Hauling-out Place.

At certain times of the year vast numbers of sea-lions are seen on the benches of the high, rocky island lying just off Cape Cook, and named after the naturalist who accompanied Cook. Dr. C. F. Newcombe has repeatedly seen immense herds of these animals on the rock in question, and having had information from Indians of its being formerly a favourite hunting-place of the Klaskino Indians to the north and the Cheklesets to the south, it was a matter of surprise to find the place apparently deserted on July 20th.

Captain Bilton, commander of the D.G.S. "Newington," took his ship close to the rock, but even with the use of powerful glasses no one on board could see any sign of sea-lions here. The absence of sea-lions was also noted by Captains Troup and Gillam a few days later, when passing close to the same rock on the upward and downward trips between Victoria and Quatsino in the C.P.R. steamer "Princess Maquinna."

The Klaskino Indians know Solander Island by the name of Tiehdama, and, like the Cheklesets, imagine it to be a petrified right whale, and to be haunted by a huge man-eating devil-fish. Each tribe killed sea-lions here in former days, with their respective villages. The inlets near them are about fifteen miles distant. Nesparte Inlet, to the south-east of Cape Cook, affords the safest anchorage for vessels of moderate size, and a plan of it, No. 716, has been published by the British Hydrographic Office.

On working south from Solander Island nothing further was found in the way of sea-lion habitations; though they are reported to frequent the rocks off Long Beach, the islets of the northern entrance of Barkley Sound, and the Bird Rocks off Effingham Inlet, during the winter months.

At Ucluelet the fishermen engaged in herring and halibut fishing have had a great deal of trouble from sea-lions scattering and devouring large numbers of fish, and they of late years have been shooting them on every possible occasion, claiming that in the winter of 1912 they killed nearly 1,000.

The Indians at Ucluelet maintain that during the last five or six years the sea-lions have become far more numerous and destructive and a new type has made its appearance. This they are unable to clearly characterize, except by its light-coloured chest and flippers, redder shoulders and back, hair shorter, no mane and its inferior meat.

From Barkley Sound south no places were visited or information gathered re sea-lion depredations.

Respectfully submitted,

C. F. NEWCOMBE.

W. C. NEWCOMBE.

Victoria, B.C., December 1st, 1913.



(No. 1.) Sea-lions on Virgin Rocks, Queen Charlotte Sound, August 28th, 1913.

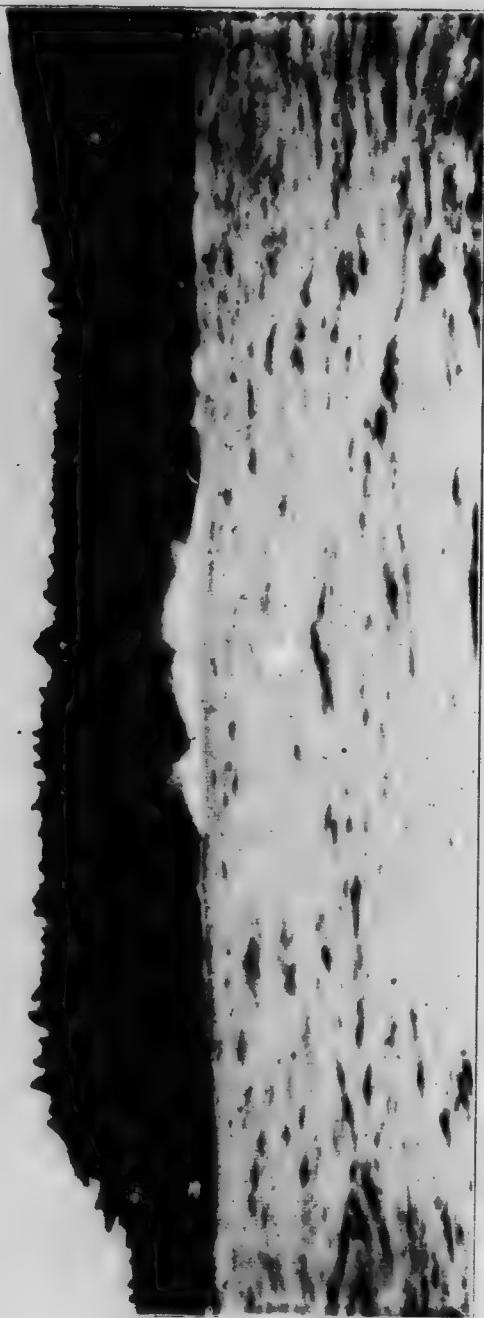
(No. 2) Sea-lions taking to the water, Pearl Rocks, Sea Otter Group, May 21st, 1912.



(No. 3.) Hair-scales.
Photographed by Warburton Pike.



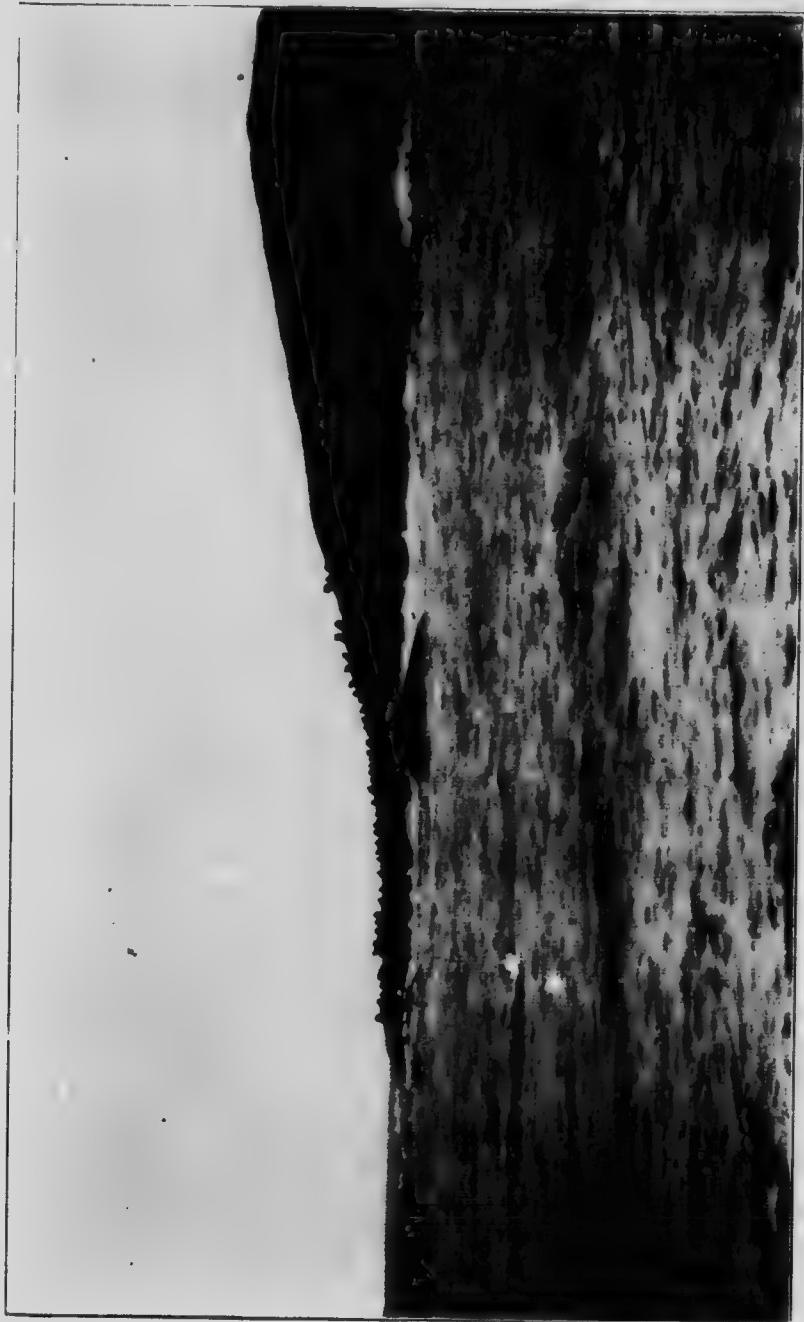
(No. 4.) Sponges. Pearl Rocks, Queen Charlotte Sound. May 21st, 1912.





(No. 5.) Head of Sag-Horn, Virgin Rocks, Queen Charlotte Sound, August 8th, 1912.

(No. 4.) *Saltions, Virgia Rocks, Queen Charlotte Sound, August 28th, 1912.*

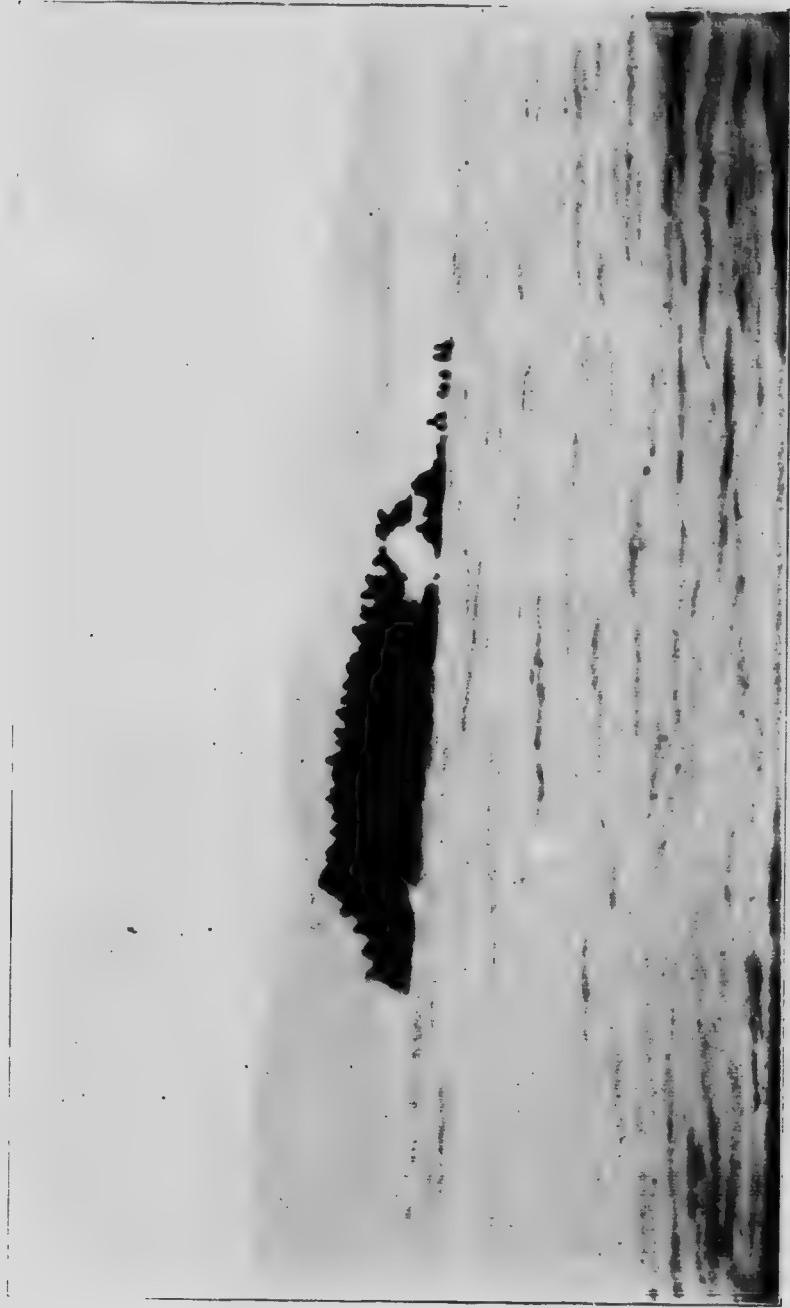


(No. 6.) sea-lions, Virgia Rocks, Queen Charlotte Sound, August 29th, 1912.



(No. 7.) sea-lions in the surf, East Haycock, Cape Scott, August 17th, 1912.

(No. 1) Sections on South Rock, East Haycock group. Type Scott, August 2d, 1912.





(No. 9.) Bull killed at Pearl Rocks, May 21st, 1913. Approximate weight, 2,100 lbs.

Photographed by Warkuris Fife.



(FIG. 10.) Sleepy sea-lion. Triangle Island.

(No. 10.) Sleeping sea-lion, Triangle Island.

(Photographed by Warkworth Pier.



(No. 11.) Sea-lion landing at Triangle Island.

(Photographed by Warkworth Pier.

(Photographed by Wartanowitsch.)



(No. 12.) Seal-pup. Triangl Island

(No. 12.) Sealion pup, Triangle Island.

Photographed by Wetherbee File.

(No. 12.) Sealions, Triangle Island.

Photographed by Wetherbee File.



(Photographed by Warburton Pike.

(No. 14.) *Nemalion* pup, Triangle Island.



(No. 14.) Sealion pup. Triangle Island.

Photographed by Warburton Pike.



(No. 15.) Sealions. Triangle Island.

Photographed by Warburton Pike.

|Photographed by Warburton Pike.

Sea lion pup, Triangle Island.



NOTES ON SEA-LIONS ON COAST OF BRITISH COLUMBIA.

FROM THE JOURNAL OF C. F. NEWCOMBE.

Quatsino, V.I.—1913. Chief Pasen, of Kwatsenoq (Charlie), working at the Wallace Cannery, stated:—

Food.—All kinds of fish; halibut, salmon, black cod, herring, etc.

Breeding-time.—Salmon-berry month, i.e., early June.

Chief Charlie has now no particular use for the sea-lions, and has no objection, therefore, to their being killed. Would gladly help if he could be sure of a bounty. When out of oolachan-grease he sometimes uses sea-lion blubber, but would not go out of his way to get one.

Killing.—The easiest way to get them is on the islands where they breed. Could kill any number of young when the mothers are in the water after food. He thinks that some of the young males do not go every year to the islands.

Hair-seals.—These breed on low rocks, sometimes on those generally awash, but not in the open sea.

Chief Phillip, of Koskimo, confirms all the above. When seen on the small island in front of the Quatsino Cannery, he and his wife were engaged in trying out the fat of a young sea-lion on the beach. This they had just killed when in search of sea-eggs. The blubber from under the skin had been cut up into chunks and was being boiled down, with a very little water to start the melting, in an iron pot.

Chief Sakius, of Koskimo, say that in former days his people used often to go to Solander Island after sea-lions. Their name for the island is Tieixdema, which means the "Place of Sea-lions." They consider that this island is a whale, which was turned into stone at the time of a great flood. The highest point is the back fin of the whale, and there is a small spring of water here. Near this fin is a hole through the rock, and when there is a heavy sea on, spray dashes through it and looks like the stream from a whale blowing. The whale's head points towards the north-west; near the tail (i.e., to the south-east) is a small canoe harbour. In old days this island was the property of the Nootkan Tribe, called Tsekeltisatuq, who are called Checkleset by the whites, but the Kwakiutl Tribe, called Tlaskino, who used to live in Klaskino Inlet, took it away from them after a fight. Sea-lions eat too many salmon, halibut, and black cod, so Sakius would be glad to see their numbers reduced. No Indians are now hunting them or using them, and there is no market for their skins. The best place to kill them is on their breeding islands. In former days, sea-lion bladders, inflated, were sometimes used for floats when hunting for whales, and common seal-bladders for halibut.

Hair-seals.—These are bad for fish also. They bear their young, mostly in this locality, on small rocky islands inside Quatsino Sound.

Triangle Island is one of the great breeding-places for sea-lions. It is called Heitla, and is owned by the Nahwitti. The Haycocks are called Nagolawitli, or middle islands, and the Lanz Islands, Numasdeema, or Old Man's Island. The last has a fine harbour, and on it in old days the Indians used to drive the sea-lions towards their houses and kill them with clubs. The nearest island of all is called Yutili. There used to be a permanent village here called Yutilnu. The last of this tribe (Yutilnu) still live at Humtaspi. They used to have small totem-poles at their village.

Sakius added that if a bounty were put on sea-lions the young men would go after them with clubs, as in the old days. They could do better this way than with guns, as they would scare them all away.

In the old method the young men ranged themselves along the lanes which the sea-lions followed when hauling out of the water, and were placed in two ranks, one on each side of the lane, but not standing opposite one another. So if a man on one side failed to kill a sea-lion, the next man, who would be on the opposite side, would have a good chance to strike. The old, big sea-lions were seldom killed. They were always at the highest points and it was too hard to kill them with clubs.

When hunting the sea-lion in the water they used harpoons with bladders attached to the lines as floats. These harpoons were thrown clear of the hunter and were not used as lances.

They were two-pronged, with finger notches just like the present fur-seal spear; the only difference being the addition of the seal-bladder float. Mussel-shells were formerly used for the points.

Solander Island.—No one ever stays overnight on this island on account of a huge devil-fish which reaches out of the water with its arms to find if any human being is on the island. If it finds any one, it quickly kills and eats him. It has no special name, though the common name for devil-fish is Tekwa. Such man-eating by devil-fish has not been observed anywhere else.

The following is the story about Solander Island: Two Klaskino Indians went halibut-fishing near Cape Cook (Ewala). They went ashore on Solander for devil-fish bait, landing where there was a horizontal fissure in the rock. Then the sea began to boil, and they knew that a sea-monster must be near (takim). Floating past came a number of Indian boxes, other household property, and a number of kelp-stems. Then they saw something red, which turned out to be the arm of an enormous devil-fish. They hastily hid themselves in a vertical crack in the rock, but the arm kept feeling about, and at last a head came up from the sea and then slowly drew back, followed after a time by the arms. These were long enough to have reached from the sea to the top of Solander Island.

Sagius himself would on no account sleep on the island, on account of this beast. He claims that he once saw six deer on it, and old people say that at one time there was always a small band there.

Rivers Inlet.—Chief Hitlamas, of the Wikeno band, says that there is a very old rookery in the Sea Otter Group of Islands. Some of the oldest traditions of the tribe relate to it. In early times the people used to go to the west side of Calvert Island in the sockeye season to kill sea-lions. In those days clubs were used, and double lines of armed men used to be formed on the rocks, just as reported at Quatsino. The bodies were used both to provide meat and grease for food. Informant and one other man are all that are now left of the old band of hunters. In early days two old sea-lions used to guard the only approach to the summit of the principal rookery, and these used to bite at any hunter getting too close. A man was once picked up by one of these watchmen and thrown into the sea. In the group of islands there are three on which sea-lions breed. On one of these is a small harbour fit for canoes in calm weather. On one of them is also a small lake of salt water, called Ohsta, in which sea-lions hide when chased. In sockeye season these rookeries are covered with red-coloured excrement. A long time ago the Indians used to take sea-lions in pond just mentioned by strong nets made of nettle-fibre string.

Alert Bay.—April 26th, 1913. A sea-lion was shot by Ned Harris, an Alert Bay Indian, off Pearce Island, about two miles away. To prevent it from sinking he at once made a slit through the skin of its head, passed a line, and towed it to the nearest beach. Being alone in a small fishing-canoe, he then made for Alert Bay for a gasolene-launch to bring it in. They arrived about 6 p.m., where I saw the carcass being hauled out by about twenty men to the tune of an old song used on such occasions. The measurements were as follows:—

From tip of snout to end of flippers	12 feet.
Round the neck, just back of the skull	4 feet 6 inches.
From the resting-place of one shoulder to same place on the other side	5 feet.
Averages along the ground, from side to side	5 feet 4½ inches.
Weight measured by courtesy of M. H. Chambers, of Alert Bay Cannery, with scales—	
Meat	1,600 lb.
Blood	100 lb.
Skin and some of the bones	450 lb.
Total	2,240 lb.

The following notes were furnished by Captain C. Spring:—

Nawhite.—May 1st, 1913. King Tom's information. The Pearl Rocks are the only group in Queen Charlotte Sound on which sea-lions have their young. This is in June, on the islands called Wawis. Some time ago Tom and three other men left Nawhite at 5 a.m. and returned

only
1 for
l-fish
l. If
common
where
shing
where
hat a
ouse-
1 out
n the
lowly
from
lains
small
ery in
In
on to
formed
t and
nd of
of the
once
re are
calm
-lions
ment.
made

ndian,
a slit
one in
They
o the

group
islands
urned

nt 4 p.m. same day with fourteen young sea-lions about two weeks old. Most were clubbed, some were shot with an old H.B. trade gun, ball being used. On one island is a small basin, in which are many sea-lion whiskers. At high water this basin is connected with the sea outside. It is a good place to land on south side of largest rock, but only in fine smooth weather.

Cape Scott Islands.—The *East Haycock*, or Numasta of the Indians, contains a small boat harbour on the west side. The sea-lions have their young on an outer rock to the north-west of East Haycock. There is an anchorage called Tekal on the south-east side.

Triangle Island contains two breeding-places on detached rocks, one to the east of island, named Khwa-mola. On the south side of it is a good gravel beach to land on. On the north-west side is the other rookery, Clu-wis. This is reported to have both sea-lions and wig-seals. The latter are said to be white on the forehead, and is called Tsi-kin by the Indians.

From Albert T.ompson, of Wikano, re Queen Charlotte Sound rookeries. There is good anchorage at south of Cape Calvert, opposite Sorrow Island, sea-lions have their young any time after June 15th. The mothers stay on the rocks for about three weeks, and then they will take to the water, but always return to the rocks. Indians used to club old as well as young sea-lions. Parents are very affectionate and will take the young in mouth when they jump into water.

From Johnny Davis, a Skidegate Haidas living at China Hat (Indian name Git-cum). On the Queen Charlotte Islands the only rookery that J. D. knows of is that at Cape St. James. All other places used by them on the mainland side are merely stopping-places.

At Metlakatla, Indians said that there is a rookery outside of *Stephens Island* where young are brought forth about the middle of June.

From Timothy Tait, of Ninstints Village, Q.C.I. To land on the rookery at *Cape St. James* the wind should be from west or north-west, and the landing should be made during ebb tide. When a west wind has been blowing for two days, then make a try on the east side of the island. Sea-lions are always afraid of a man and have never been known to attack one. Young are brought forth in July.

NOTES COLLECTED DURING TRIP IN SLOOP "NYMPHE."

(MAY AND JUNE, 1913.)

May 1st. From Nahwittle Tom, Xumtaspl, Hope Island:—

Pearl Rocks (Wâwls) are breeding-grounds. He has killed fourteen small ones with clubs at one landing. The landing is on the south-west side. Reports a small lake called Busta on the main rock. It is a tidal pool flooded at high water, and also when a heavy surf is running. A great many sea-lion whiskers are reported to be in the bottom of it.

Triangle Island.—Sea-lions are to be found on the rocks on the east side, Kwâ-unle, and on rocks to the north-north-west, Tâuis, the landing on the latter being on the Triangle side. Old male seal (fur), Dâlikin, with a white streak down the forehead and making a barking noise, as well as roaring like a sea-lion, is to be found on Triangle Island.

East Haycocks.—Name of the sea-lion rocks, Numasdema, which are on the north-west of the main island. The name of the latter and the landing on it, for small boats, being Tikâl. The landing is on the west side.

Lanç Island.—There is an anchorage on the east side good for small boats.

Cape Scott, Vancouver Island.—The Cape is only a hauling-out place.

May 2nd. From Albert Thompson, of River's Inlet, and Sam Star, of Bella Bella, met at Namu:—

Pearl Rocks.—The Indians clubbed both young and old here in the olden days. They have in recent times shot them, aiming at the head (ear if possible). Sea-lions deliver their young any time after June 15th, and stay on the rocks for about three weeks, when they take to the water for short trips in search of food. When frightened by man, the females will pick up their young in their mouths, like a cat, and throw them in the water, following them immediately; never appearing to mistake their own. The best anchorage for small boats, when waiting to go out to the Pearl Rocks, is the westerly of the two bays, inside Norrow Island, on Calvert Island.

May 3rd. From Captain Carpenter, Bella Bella:—

Price Island.—There was a rookery here in his younger days, but he does not think they breed here now.

Pearl Rocks.—About twenty years ago he went to the above rocks in a small schooner, with two or three other men. They filled the hold with pup-skins, intending to sell them to some man in Victoria, but lost the whole lot through not having enough salt to cure them.

May ... From Jonny Davis, a Haida living at China Hat: He did not know of any rookeries other than *Cape St. James*, three of the rocks being covered with sea-lions during the breeding season. Knew of hauling-out places to the west of China Hat, which I took to be on the Gander Islands.

May 7th. Lisit Douglas, Kitkatla: Did not know if they breed on the west side of Banks Island, but knew of them hauling out on rocks to the south-west of Bonilla Island.

An old man at Kitkatla says they breed on the rocks off Banks Island, south-west of Bonilla, in June.

May 9th. An Indian at Metlakatla says that they breed on rocks on the west side of Stephens Island. He could not say on which, not being familiar with a chart, but said it was possible to hear them roaring from Qlawdzeet anchorage on a still morning. As near as I could get was one of the rocks of the Archibald Group.

May 11th. Oswald Tolmie, Claxton: Hair-seals breed on *Shrub* and *Haycock Islands*, to the west of Banks. Sea-lions on *North Danger* to the number of 1,000-odd. His grandfather with four other men clubbed them here in the old days. There is a landing on the north rock of the group. *Butterworth Rocks*, north-west of Stephens, are breeding-grounds of hair-seal.

May 14th. Roger Pearson, of Metlakatla, seen on Rushton Island: Sea-lions are to be found on the *Butterworth Rocks*; hair-seals breed in the *Tree Nob Group*. There is an anchorage in the Tree Nobs, on parallel $54^{\circ} 15' N.$, between the islands marked 120 and 177 feet high. We

called in at Qlawdzeet anchorage before going to Rushton Island, but could not find the Indians reported to have been there.

May 15th. Joseph Pierce, Mathew Johnson, and Dave Denny, of Port Simpson: The above Indians say that the sea-lions sleep on the rocks on the south end of *Zayas Island*, and only sleep on the Butterworth Rocks. An anchorage on *Dundas Island*, between the two islands marked 200 feet high, with a small island between. The anchorages on Zayas are on the north and south ends, according to the wind.

May 30th. *Zayas Island*.—We left Boat Harbour, on Dundas Island, at 4.30 a.m. for the Zayas Island Rocks, arriving off the rocks at 6.30. We skirted the shores on the south, west, and north sides of Zayas, but did not see a single sea-lion.

June 1st. Called in at Rushton Island on our way to the Butterworth Rocks. We had another talk with Roger Pearson. On questioning him again as to whether sea-lions breed on the Butterworth Rocks, he said they only hauled out there when following the herring and salmon runs. We left Rushton Island at 10.30 a.m. en route to Masset and passed within a quarter of a mile of the Butterworth Rocks at 1.15 p.m., but saw no sign of life other than sea-birds.

June 8th. Timothy Tait, Skidegate: "June and July is the time when they breed on the *Cape St. James Islands*, though you will still find numbers of sea-lions there in August. Landing on the islands is easiest when the tide is on the ebb, in light west winds, the landing being on the east side. The best anchorages while waiting to go out to the rocks are in bays on east side of Kunghit Island, Luxana Bay, if south-east wind. The Indians' old way of killing sea-lions was with spears with lanyards, from 200 to 300 fathoms long, attached. They were speared when on the rocks and let jump in the water, where they were played as we do fish on a trolling-line, being finally finished off with a club." Tait says his grandfather once had the stomach of a sea-lion which would hold 120 gallons of oil.

June 12th. *Kerouart and Hummock Islands, Cape St. James*.—We arrived off the Kerouart Islands at about 10 a.m., with a westerly swell running and a light south-east wind. The rocks are very perpendicular, with many crevices and small ledges, none of the latter being capable of holding many more than fifty sea-lions. We circled the rocks and found sea-lions on every available ledge. There were only two or three of this year's pups to be seen from the water, though a great many I should take to be yearlings. The pups we saw could not be more than a week old. A great many old bulls were on the rocks, all as high up as possible; none of them more than 15 feet from tip to tip. A rough estimate of the numbers here would be in the neighbourhood of 2,000, all *stelleri*.

June 13th. *Kerouart and Hummock Islands, Cape St. James*.—The sea is again too heavy to try and make a landing. After trying to get some more photographs of the sea-lions on the rocks, Captain Spring shot one or two, but we could not get near enough to pick them up. The largest group to-day were between the two high rocks of the Kerouarts. We could not get on the west side of the islands on account of the tide-rips. After spending half an hour out here we ran in to Humpback Island. The sea-lions here were on a ledge which runs along the south-east and south of the south-west rock. There must have been 500 in the group. There were a great many pups amongst them and a few old bulls with fine whiskers. All the adults took to the water on our approach, leaving the pups, the old bulls being the last to leave.

June 15th. *Banks Island, off Banks Island*.—We crossed Hecate Straits last night and made for Shrub Island. Arriving here at 5 a.m., we only found two sea-lions, apparently feeding on rock-fish. Finding no sign of a rookery, we continued our course south to Haycock Island, but again find no trace of sea-lions. About midday, when off an uncharted rock three miles to the north-west of North Gander and abreast of Gull Rocks, we saw a group of fifteen or twenty sea-lions, all adults. After searching the rest of the Ganders and finding no further sign of sea-lions, we made for Price Island on our way to Bella Bella for supplies.

June 16th. *East Bella Bella Cannery*.—J. E. Palmer, a trapper, says a great many sea-lions are found off Price Island. Did not know if they breed there. Mr. Whitesides, manager of the cannery, has seen many in Milbank Sound, especially near Ivory Island Lighthouse.

June 17th. *Price Island*.—We took up the coast-line off the west side of Price Island, but did not see the sea-lions reported at Bella Bella yesterday. Made for Goose Islands from here, arriving at 4 p.m. Seeing no sea-lions, we landed at the old fishing village. Here there were the remains of sea-lion carcasses, and also those of about forty fur-seal; the Indians having left quite recently from appearances.

June 18th. This morning, on our way into Namu, we passed White Cliff Island. Two old males were hauled up sleeping on the south side.

June 19th. *Namu*.—Notes gathered from a Dane, who has been mending nets for River's Inlet canneries for some years: Sea-lions not only take fish out of the nets about the entrance of Rivers Inlet, but destroy the nets as well by charging right through them. When feeding on salmon they often throw them in the air and catch them again, for sport. Estimates the loss per net from 300 to 600. Sea-lions are increasing rapidly in this vicinity.

Notes from Niimondsen and other Danes: There are sea-lion resorts on the west end of Nahwittle Island and north of the entrance to Quatsino Sound. They would be glad of extermination or a great reduction in the numbers, though they think a bounty would be of little use, as sea-lions sink so rapidly when shot, it would only be a benefit to hunters on the rookeries.

June 21st. *Pearl Rocks*.—These are low, flat rocks lying five miles south-west of Cape Calvert. The two larger rocks were covered with sea-lions, though there were only adults on the southern one. There must have been fully 800 adults on the main rock and 200 pups. After taking a number of photos we opened fire on the herd, killing half a dozen, but only getting one old male, which we towed into Cape Calvert to skin and dissect. Another was left on top of the main rock, it being too choppy to land. On opening the stomach of the old male we found no food of any kind, but a number of parasite worms.

June 22nd. Killed two females, three males, and a pup on the main rock, losing all with the exception of the pup. One of the female bodies remained on the rock when killed, but slipped the lashings in the undertow when trying to get it off to the launch. I landed and clubbed the pup secured. On getting a bird's-eye view from the top of the main rock, I estimated the number of pups from 300 to 350.

Watch Rock.—Watch Rock is three miles west of the Pearl Group. It is far more precipitous than the latter. There were only about 100 adults here and not more than a dozen pups.

TRIP TO THE NORTH AND WEST COASTS OF VANCOUVER ISLAND. (JULY, 1913).

July 15th. *East Haycocks*.—We approached within two miles of the above rocks and could see sea-lions hauled out on every rock of the group, the majority being on the sunny side. Could not distinguish with glasses whether there were any pups or not. Saw a party putting off from Lanz Island, where they had been skinning some sea-lions they had shot in the morning.

Triangle Island.—According to the light-keepers here, the sea-lions are not nearly so numerous as when the light was first established. I took a look at the rock on the north-west side of the island, attempted to photograph the sea-lions at about 200 yards distance, but the light was very poor. There were not more than 300 sea-lions on the rock, all told.

July 16th. Took the light-tender's boat and went round to the north and north-west rocks. On the former there were only fifty, all adults. The north-west rock appears to be the largest rookery of the Triangle Group. There were 250-odd adults and about fifty pups. The latter have grown a great deal since we saw them on the Pearl Rocks, and many of them now take to the water. We saw a number of hair-seals in the kelp near shore; some had pups. Shot at them and the sea-lions. Hit a number of the latter, but did not get any. On approaching the rocks to the east we met a few travelling sea-lions and feeding hair-seals, but did not see any on the rocks. In the afternoon I took a look at the rookeries from the shore. Only about fifty sea-lions had gone back to the rocks on the north-west and three on the north rock, though there were a bunch of a dozen playing on the lee side of the former. There were a number of hair-seals in the kelp and on the beach on the south-west side of Triangle.

July 17th. Heavy fog and south-east wind, so we did not attempt to go out to-day.

July 18th. Travelling fog-banks coming in from the north-west in the morning. Quite a heavy swell from the same direction. The sea-lions found the weather side of the rocks too uncomfortable, so took to the water and landed on the shore side. They all had a hard time landing, some taking as long as fifteen minutes to get out of the reach of the surf; they always jumping under the approaching breaker if they thought it was liable to take them off the rock. In the afternoon we went out to the north rocks, landed, and managed to get in a few shots. Lost two specimens in the surf. The sea was too heavy to approach the north-west rocks, so we pulled away for the south-east and south rocks. Found one on the south-east but none on the south rocks.

July 19th. "Newington" came in for us at 6 a.m. Left the islands behind at 11 a.m. and put in to Quatsino for the night. The party we saw hunting at the Haycocks came in to the cannery. They made one good killing on the rocks, but only managed to get away with one boat-load of carcasses, the sea carrying away the rest.

July 20th. *Solander Island*.—We arrived off here at 10 a.m. Very clear weather with a nice north-westerly breeze, but could not see a single sea-lion on or in the vicinity o' the rocks. Anchored for the night in Nootka.

July 21st. Coasted down as far as Tofino.

July 22nd. We left the "Newington" on arriving at Ucluelet. The captain ran into Long Beach near enough for us to see if there were any sea-lions on the rocks in the centre of the bay, as they are reported to haul out there when herring and salmon are running. We could not make any out.

July 23rd. *Ucluelet*.—Information from H. J. Hillier: He has lived here and in Barkley Sound for the past eleven years, first at Toquart and then at Ucluelet. The first four years the fishermen were bothered with humpback whales, which drove the herring, in November, into Effingham Inlet in large shoals, also into Toquart Harbour; later in the season into the shore between Maggie River and Long Beach. The first season of the whaling ninety humpback whales were killed. At that time sea-lions were scarce in the sound and spring salmon plentiful. In the second season of whaling there was a decided increase in the number of sea-lions, and two or three years later they came in large bands. When the herring were in the shoal-grounds available for fishing, the sea-lions would charge through the herring, scattering them, doing same with salmon. The herring from this time on have kept out in the open waters much later, followed by thousands of sea-birds. About this time a fish-curing plant was started in Ucluelet on the strength of information gathered from Indians and pioneers. A number of private individuals, finding the fishing so difficult, began to kill sea-lions on every possible occasion. Two years ago the fishing company issued guns to their men, and 500 rounds apiece to Mr. Hillier, his brother and son. In the 1912-13 winter the latter men were given 1,000 rounds apiece. In three trips out they fired 2,000 shots and estimate they killed one sea-lion for every five fired. A rough estimate of the number killed by all parties hunting is over 2,000. The herring came in a mouth earlier this spring. The spring-salmon trolling has been successful for the first time in three years. The rocks on Long Bay have been a living mass of sea-lions for the last twelve years, has seen dead pups washed ashore from the rocks. He noticed the greatest increase in the numbers of sea-lions four years ago, but since the hunting they are not nearly so numerous on the rocks. Other hauling-out grounds in the vicinity of Ucluelet are at Bird Island. Great Bear Rock, in Western Channel, was formerly a great place for them.

The above story was confirmed by Mr. Olsen, caretaker of the saltery; Mr. Bain, the head fisherman; and James Barron, buyer for the Wallace Fisheries in Ucluelet; the latter adding that he ha' personally killed about 1,000, but had only managed to get nine of their bodies, all of which had fish in the stomach.

Story from Joe Atzik, Indian of Ucluelet: He says that the sea-lions have only come to the alleged rookeries off Long Bay of late years. They are there in the greatest numbers between November and the end of June. He has been fishing with a white man close to these rocks for the last few weeks, but has seen no sea-lions. The Indians all think there are two kinds of sea-lions; one is light-coloured on the chest and its meat is inferior. We met the white man fishing with Joe; he confirmed the story, and adds that the sea-lions often chase the herring into the harbour as far as the wharf; also well into Toquart and Effingham Inlet. He says that sea-lions have often taken halibut off his hooks. They eat the flesh by ripping it in tossing it about.

July 24th. Information from Tyee Jack, Ucluelet: Says that there are two kinds of sea-lions. The new kind has only been seen in the last three or four years. It has white on the chest and sometimes on the flippers. It is redder than the old kind and far more ferocious on being captured. The hair is much shorter and they have no mane. Sea-lions frequent the rocks off Long Beach, but very few breed there.

HAYCOCK AND SEA OTTER GROUP TRIP.

August 16th. We left Hardy Bay at 7 a.m. for Lanz Island, where Mr. Grinnell's party have their headquarters. On passing the north end of Hope Island we saw no sign of sea-lions. Arrived at the camp at 2 p.m.

August 17th. *East Haycocks.*—The distance from the anchorage to the above rocks is five miles. We arrived off them at 6.30 a.m. and immediately started hunting. The animals were very wild, they all taking to the water when we were over a quarter of a mile away (pups as well). We started hunting at the north rocks of the group, on which at our approach there were fully 1,000 sea-lions. Hunting from the launch was tried, but we had a great deal of trouble getting the animals aboard, so gave up and took a run down to the main rock, where we found 400 to 500 on a rock immediately north, and about 1,000 on rocks to the south. Finding we could not do anything from the launch, Mr. Grinnell and I took to the dinghy. We succeeded in getting twenty pups and must have lost another ten or twelve through their sinking so quickly. The other crew came aboard at 11.30, having got forty pups and a year-old bull for the morning's work. With the six picked up by the launch, we had sixty-seven for the morning. The afternoon was spent in skinning the catch. I opened a number of pups, but their stomachs only contained milk. The yearling's stomach was full of a white fluid, quite thick (semi-digested fish ?), and a number of bones which looked like black bass's.

August 18th. We find the hunting much more difficult this morning on account of a heavier ground-swell, the pups under the mother's guidance, taking advantage of all breaking-water. The total of both crews was only twenty-seven for the whole morning, though I think we lost as many. I had a good illustration of the mother's affection for her young. We had wounded a pup and got a gaff in it, but could not get it aboard the dinghy on account of the choppy water and the fight it put up, so had let it go with the hope of another shot. It dove as soon as released and by series of quick dives got 20 yards away, when the mother appeared alongside it. She immediately headed for the open water, keeping just ahead of the pup and watching our movements whenever she came to the surface. She managed to outwit us and get the pup safely away, but I am afraid it would not live long, as it was bleeding freely. Another sight of interest was the consternation of the sea-lions on the appearance of a pair of black fish amongst them. They scattered immediately, some even trying to get out on the rocks, though we were hunting a short distance off. The black fish then went off to another group near where the other boat was hunting. The hunters on coming aboard saying that the black fish had managed in catching a large sea-lion and threw it 30 or 40 feet in the air. Captain Whidden has seen the same thing happen to fur-seals.

August 19th. We ran down to Quatsino for supplies and salt. The D.G.N. "Newington" arrived in the afternoon from the south. The captain said he had never seen so many sea-lions on Solander Island. I have since seen Captain Spring, who passed the island a week later without seeing any at all.

August 20th. We returned to Lanz Island camp and found that the hunting crew had been out to the rocks and brought in twenty-six pups. They say they could have had many more if they could have carried them, as the conditions for hunting were splendid.

August 21st. Had a very successful morning at the rocks, getting sixty-four pups. We made up a second full crew for the first time, having brought a large dory back from Quatsino. We hunted till noon, when we ran out of shells. The measurements of an average pup are 4 feet 8 inches from tip to tip, with a girth immediately in front of the fore-flippers of 2 feet 10 inches. They weigh about 120 lb.

August 22nd. A fresh wind rose during the night from the south-east, driving us out of our anchorage at Lanz Island over to the lee of Cox Island. The sea-lions must have had an uncomfortable time of it on the rocks. We noticed two or three bands come through the channel between Cox and Lanz.

August 23rd. We went back to Lanz in the morning, but could not get outside on account of the wind changing to the west and making a nasty cross-sea. We loaded all the skins in preparation for moving into the Sea Otter Group. The total was 249.

August 24th. Heavy sea all day.

August 25th. We went out to the rocks this morning, but found a very heavy sea. We shot one cow and a bull, the latter on the rocks, but we had to leave him there. The cow measured

9 feet 3 inches tip to tip, 6 feet 2 inches greatest girth, 7 feet spread from tip to tip of fore-flippers. The stomach was full of fish recently eaten. I could recognize a small bit of salmon by the pink flesh, and cod and bass by the bones.

August 28th. We left Lanz Island for Smith Inlet to make a base to hunt the Sea Otter Group from.

August 27th. Made our headquarters in Millbrooke Cove, Smith Inlet.

August 28th. *Virgin Rocks*.—They are fourteen miles west-south-west of Egg Island and consist of a group of three rocks, with a lone one a mile to the south-west. The middle rock of the group of three is the chief rookery. It has two pinnacles joined at low water by a ledge. There must be all of 2,000 sea-lions on the four rocks. We shot a good many, but only managed to get fifteen pups and one old bull on account of rough water. The bull measured a little over 12 feet. I did not get an opportunity to cut him open, as what with his weight and greasiness we had a big job handling him in the small space at our disposal.

August 29th. We left camp at 5.40 p.m. and arrived at the rocks by 9. By the time we reached them the wind was very fresh from the north-west, making it impossible to hunt, so we ran down to the south-west rock and found fully 1,000 sea-lions on it. The captain swung to the lee of the rocks to give me an opportunity to photograph them. We then bore away for the Pearl Group, trusting to better conditions there. We arrived off them at 11, but could not do anything. There were not anything like the number of sea-lions there as when I was there in June.

August 30th. Not being fit to hunt, we went over to Takush and then up to the Smith Inlet Cannery. Mr. Harris, the manager, says he has very little trouble with hair-seals and with sea-lions, only in the beginning and end of the season, i.e., spring-salmon runs. They come right up to the cannery in winter when the herring are running. Indians at Takush say that the hair-seals haul out on the rocks just inside Egg Island.

August 31st. Strong north-west wind, so we did not go beyond Egg Island. Called on the light-keepers, but did not get any useful information.

September 1st. On trying the Pearl Rocks to-day we find only about 500 sea-lions, all on the large rock. As soon as the firing commenced they scattered over a large sea, which made the hunting difficult; the total catch for the day being only twelve, two of which were yearlings, male and female. Both were about 7 feet long. On opening the stomachs I found two mussel-shells, five stones (1 to 3 inches in diameter), and a number of parasitic worms in the female; a brownish fluid, which I would say was partly digested seaweed, and parasite worms in the male.

September 2nd. We got out to the Virgin Rocks at 9. The best day for hunting we have had, it being calm enough to approach the rocks from any quarter. We got eighty-seven, all told (eighty-one pups and six yearlings). We finished hunting at 4.30, when we had the pups played out and at our mercy, but had to stop hunting and make for home, as the weather was threatening and the glass falling rapidly. I noticed that a number of the yearlings are of a silver-grey colour here. We had not been at anchor an hour before it was blowing a gale.

September 3rd. As it was still blowing, we spent the day skinning. All the yearlings had food in their stomachs, but undistinguishable. One had a single beach-pebble and another two. In one stomach I noticed a single parasitic worm. The largest measured 7 feet 5 inches from tip to tip and 3 feet 5 inches girth. Three of the hunters in the party have fished out of New England ports for many years. They say that they have often found stones in cod-stomachs on the Grand Banks, generally on the approach of a storm.

September 4th. I left the party to-day for Smith Inlet Cannery to catch the steamer for home.

